

Abstract— This paper will discuss a proposed CubeSat size (3U/6U) telemetry system concept being developed at Marshall Space Flight Center (MSFC) in cooperation with Auburn University. The telemetry system incorporates efficient, high-bandwidth communications by developing flight-ready, low-cost, Proto-flight software defined radio (SDR) payload for use on CubeSats. The current telemetry system is slightly larger in dimension of footprint than required to fit within a 0.75U CubeSat volume. Extensible and modular communications for CubeSat technologies will provide high data rates for science experiments performed by two CubeSats flying in formation in Low Earth Orbit. The project is a collaboration between the University of Alabama in Huntsville and Auburn University to study high energy phenomena in the upper atmosphere. Higher bandwidth capacity will enable high-volume, low error-rate data transfer to and from the CubeSats, while also providing additional bandwidth and error correction margin to accommodate more complex encryption algorithms and higher user volume.